



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

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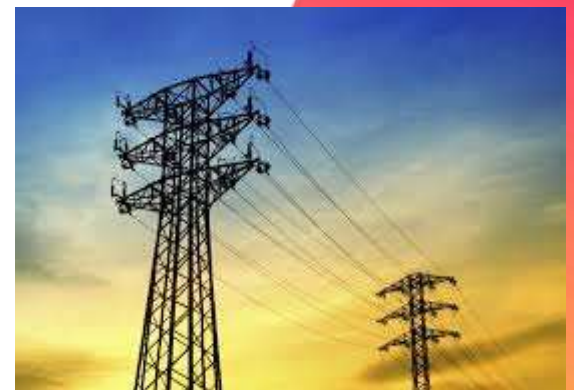
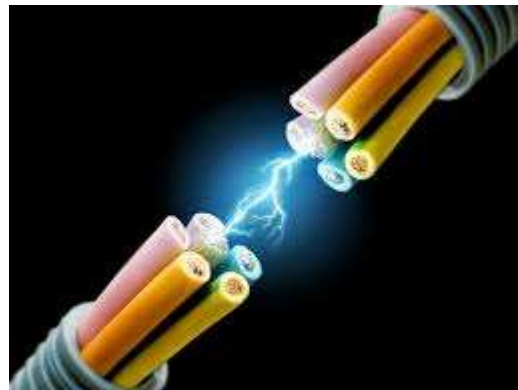
19EEB102 / ELECTRIC CIRCUIT ANALYSIS **I YEAR / II SEMESTER** **UNIT-I: BASIC CIRCUIT ANALYSIS**

KIRCHOFFS LAW - PROBLEMS



TOPIC OUTLINE

- Kirchoff's Law
 - KCL
 - KVL
- Problems



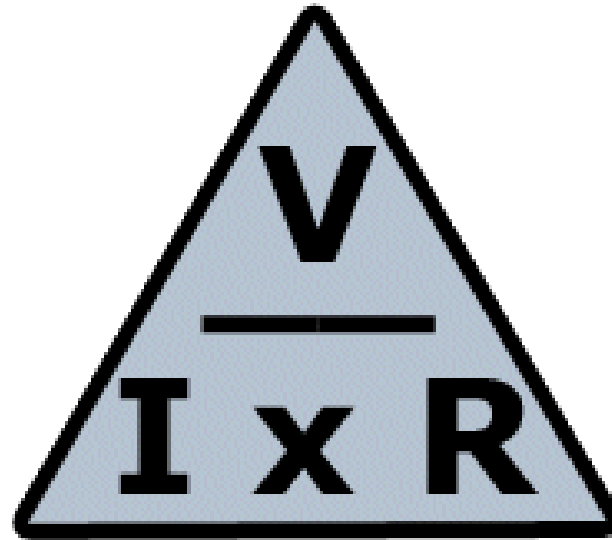


OHMS LAW - RECAP

- $V = I \times R$

- $I = \frac{V}{R}$

- $R = \frac{V}{I}$

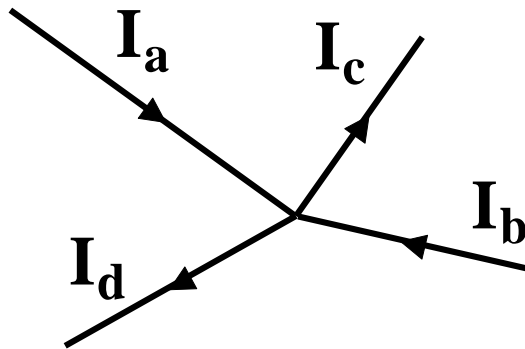




KCL

- Kirchoff's **C**urrent **L**aw (**KCL**) :

The sum of the **current entering** a node (junction point) equal to the sum of the **currents leaving**.



$$I_a + I_b = I_c + I_d$$

I_a , I_b , I_c , and I_d can each be either a positive or negative number.



KVL

Kirchoff's Voltage Law (KVL):

- The algebraic sum of voltages around each **loop is zero**
- Σ voltage drops - Σ voltage rises = 0
- **Or** Σ voltage drops = Σ voltage rises



EXAMPLE

ECA

④ Using KVL, find " V_1 "

$V_1 = 19 \text{ V}$

⑤

$I = ?$
 $V_{30} = ?$

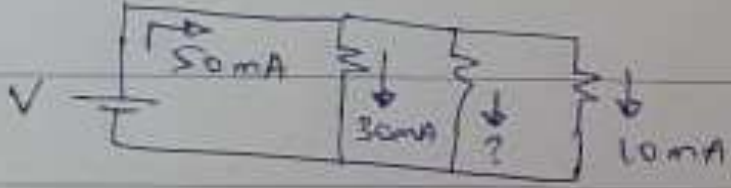
$R_{eq} = 40 \Omega$

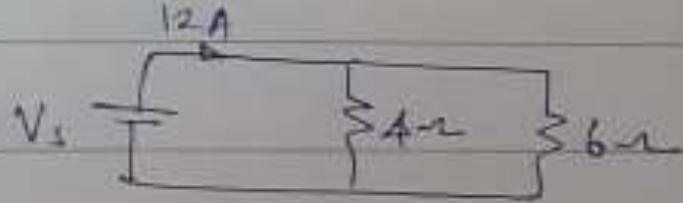
$I = \frac{V}{R_{eq}} = \frac{60}{40} = 1.5 \text{ A}$

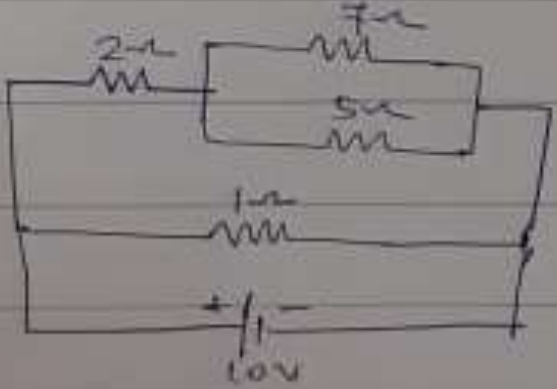
$V_{30} = 1.5 \times 30 = 45 \text{ V}$



EXAMPLE

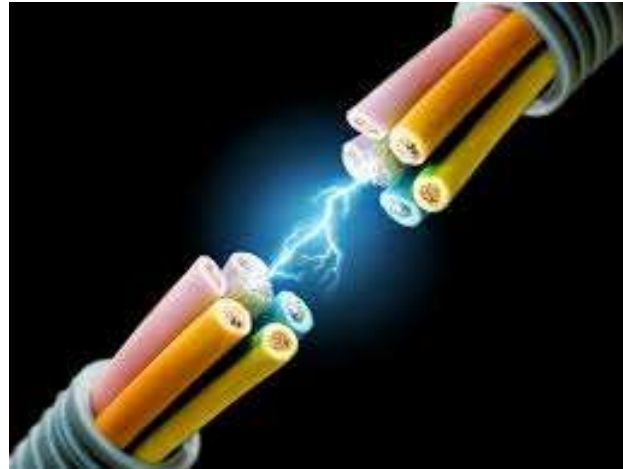
(b) 

(c)  $V_s = 28.8 \text{ V}$
 $I_4 = 7.2 \text{ A}$
 $I_6 = 4.8 \text{ A}$

(d)  $R_{eq} = 0.8 \Omega$



MORE PROBLEMS & RECAP....



...THANK YOU